

REMARKS

Claims 1-2, 4-7, 9 and 10-13 are active. Claims 10-13 are new. The prior amendment to the claims filed on 12/17/08 is entered. The amendment to the specification is not entered. The declaration of Dec. 17, 2008 is insufficient to overcome the rejection of claims 1-2, 4-7 and 9 based on prior cited prior art. Claims 1, 2, 4-7 and 9 are rejected under 35 USC 112, first paragraph and under 103 as being unpatentable over Bao in view of Carey '550 and further in view of Shi '640.

Claims 1-2, 4-7, 9 and 10-13 are submitted for the Examiner's reconsideration.

The Declaration

The Action states that the declaration may provide support for patentability, but does not support the amendment of the claims regarding the improvement of electrical on/off properties. That is, the declaration is insufficient to establish inherency of the on/off ratio per the amended specification. This is not true.

The Action states that applicants failed to supply supporting data for the tests citing MPEP 2163.07(a). As will be shown, there is no need for such data as the declaration is not submitted to urge unexpected results over an otherwise unobvious claim in view of the cited references, but rather only to prove inherency of the on/off ratio matter added to the specification in respect of the biaxially stretched substrate. The biaxially stretched substrate is unobvious over the cited references per se and there is no need to use unexpected results to distinguish the claims over the cited references, which neither suggest nor disclose this subject matter. The unexpected

results are merely ancillary to the issue of unobviousness and not necessary to show unobviousness as will be shown.

The Action does not cite the correct portion of the MPEP 2163(a) with respect to amending a specification to add material reflecting an inherent function, theory or advantage. Perhaps the Examiner misunderstands MPEP 2163(a) because it is not separated into separate subsections. MPEP 2163(a) presents two different rules applicable to inherency of subject matter in a patent or patent application in two distinct subsections.

There are two subsections (not delineated as such in MPEP 2163(a), but nevertheless are present) in the MPEP). The first subsection states:

[1] "By disclosing in a patent application a device that inherently performs a function or has a property, operates according to a theory or has an advantage, a patent application necessarily discloses that function, theory or advantage, even though it says nothing explicit concerning it. The application may later be amended to recite the function, theory or advantage without introducing prohibited new matter." Citing *In re Reynolds* and *In re Smythe*.

This subsection deals with inherency as applied to an applicant's application of disclosed subject matter, but which application is silent to and does not expressly disclose the theory, the function performed or advantage of that disclosed subject matter, i.e., the on/off ratio. This MPEP subsection means that if what is disclosed by an applicant (the biaxially stretched substrate) includes subject matter that operates

according to a given theory, performs a function or has an advantage, but the specification is silent as to such theory, function and advantage (the on/off ratio), it is not new matter to amend the specification to add that theory, function or advantage.

This section of the MPEP is applicable to applicants' declaration and related facts applicable to applicants' specification. The filed declaration (is evidence of that which is set forth) sets forth sufficient detail and explanation that show that the disclosed subject matter (the biaxially stretched plastic substrate as set forth in the specification, wherein the stretching is a mechanical operation on the substrate) operates according to a theory and function and has an advantage, to which theory, function and advantage of the disclosed biaxially stretched substrate the specification is silent as to the on/off ration. The specification expressly states that this biaxially stretched substrate provides improved electrical properties, the improved charge carrier mobility. Except for some of the added dependent claims 12-13, the remaining claims are only directed to improved electrical properties.

The declaration is submitted to show that the disclosed biaxially stretched substrate performs a previously undisclosed, but otherwise inherent function, i.e., improves the on/off ratio of a transistor, and that function has a previously undisclosed advantage. MPEP2163(a) subsection 1 above implicitly manifests that the objected to amendment is permitted as it merely sets forth the previously unstated, but inherent function and advantage of the biaxially stretched substrate as to the improved on/off

ratio. Such an amendment is within the permissible amendments of MPEP 2163(a) and the declaration meets all requirements for proving that that subject matter as added to the specification is inherent.

The second subsection of MPEP21639 (a), which is the section quoted by the Office Action and which section is not applicable to the present facts) states:

[2] “ ‘ To establish inherency, the extrinsic evidence ‘must make clear that the missing descriptive matter is necessarily present in the thing described in the reference, and that it would be so recognized by persons of ordinary skill. Inherency, however, may not be established by probabilities or possibilities. The mere fact that a certain thing may result from a given set of c circumstances is not sufficient,’ ” (underlining added) citing *In re Robertson*.

This subsection cited by the instant Office Action is directed to the citation of a reference wherein the reference does not make an express disclosure of that for which the reference is being cited as a reference. That silent disclosure must, to serve as a valid reference, must be inherent in that reference. Inherency in the case of a cited reference against a claim requires that the disclosure relied on in the reference must be inherent and that requires the parameters of the subsection 2 of MPEP2163(a). This means that “the missing descriptive matter [in the cited reference] is necessarily present in the thing described in the reference, and that it would be so recognized by persons of ordinary skill. Inherency, however, may not be established by probabilities or possibilities” in that reference. That is one of skill must recognize this property is in the reference otherwise the reference is not valid as to disclosing that property.

This subsection of MPEP 2163(a) thus is directed to inherency in a cited reference and not inherency of a disclosure by an applicant in his application as applicable to the present facts. See MPEP 2112 IV. Thus, inherency in an applicant's application need not be recognized by persons of ordinary skill as asserted by the Action, but rather may be proved by factual evidence, as provided by the declaration.

In *In re Robertson*, which refers to subsection 2 of the MPEP 2163(a), the court states that anticipation under 35 USC 102 requires that "each and every element as set forth in the claim is found, either expressly or inherently described." It said the cited patent does not expressly include a third fastening means as the claim requires. Wilson [the cited reference] merely suggests using the same fastening means used to initially attach the diaper to the body to dispose of the diaper, not the claimed third fastening means as claimed. The third fastening means used for disposing of the diaper was held to be not inherent in the cited reference where the same fasteners are used to secure the garment. Thus inherency in an application and inherency in a cited reference are two different concepts and have different proofs.

Therefore, the applicable subsection of interest is MPEP 2163.(a) subsection 1 and not subsection 2 as asserted by the Action. This section 2 is not an appropriate test of determining inherency in an applicant's specification.

The evidence provided that must be probative, the type of evidence that is required including test data etc, as asserted in the Action, must be one to prove

unexpected results. Such results are deemed by an applicant to be material to the issue of non-obviousness of the claims over the cited references. All of the cited cases in MPEP 716.01(c) including the cited *In re Linder* and related cited cases therein all deal with the need of applicant to provide factual data as to proving its position of unexpected results of his application disclosure to distinguish over the prior art with respect to an otherwise prima facie obviousness issue.

Applicants' claims do not need applicants to show unexpected results to show unobviousness as pointed out below. In this respect, applicants' filed declaration in a second approach urges the unobviousness of applicants' claims over the cited references to Shi, Carey and Bao. In this respect the declaration apparently is considered sufficient by the Action, but deficient only with respect to the new matter issue of the on/off ratio. These references do not prima facie suggest or disclose a biaxially stretched substrate as claimed in combination with an applied functional layer. The electrical properties of this layer are improved by the biaxially stretched substrate. Such properties are expressly disclosed in the specification by way of example by the disclosed improved charge carrier mobility in the functional layer, so unexpected results are not necessary to prove such unobviousness as to improved electrical properties and as more fully explained below. Such unexpected results in the declaration are not necessary to support its assertion of non-obviousness of the claimed subject matter

over the cited references. Thus, the cited cases and the MPEP regarding the proofs for such unexpected results show that this issue is moot.

Most of the present claims now in issue do not claim the improved on/off ratio to which the unexpected results issue is directed. Thus, even the dependent claims with the improved on/off ratio are unobvious on the basis of the unobviousness of the independent claims from which they depend, and thus the declaration is not necessary to prove these dependent on/off ratio claims as being unobvious. However, the declaration is sufficient to show that this subject matter is inherent.

The declaration clearly states that the declarant observed test results of the biaxially stretched substrate and observed the improved on/off ratio. This provides a factual basis for this conclusion, and is not merely argument. Applicant does not have to provide further test data to show that that property is present in the substrate. The rest of the declaration support the position that the substrate operates as asserted and therefore this feature is inherent. The standard of evidence to prove inherency in an application is not the same as to prove unexpected results in an otherwise obvious claim over the cited references. No authority is cited to show this additional requirement as to inherency of an applicant's specification as to undisclosed subject matter. The fact that the improved on/off ratio is unexpected is not necessary to show such inherency. It is only sufficient to show that that property is present. The assertion of the unexpected property in the declaration is gratuitous with respect to this issue. It is

sufficient if the declaration merely asserted that this on/off property is present which the declaration clearly asserts.

The person making the declaration is one of ordinary skill in this art and there is no reason proffered as to why his assertions are not sufficient with respect to the inherency issue to which this aspect of the declaration is directed. It is not mere argument but is supported by a sworn statement based on observations, and thus has a factual background as required.

In *In re Linder*, cited in MPEP 716.01(c), the applicant admits that without unexpected results, his claim is obvious over the references. This is not true with the instant claims. *In re De Blauwe* is also cited in MPEP 716.01(c) with respect to an obviousness issue, the applicant urged unexpected results to overcome the obviousness issue, not true with applicants' present claims. That case was remanded for applicant to provide evidence of such unexpected results, the basis of his unobviousness argument, not applicable to applicants' instant claims.

In other words, the claimed subject matter in the cited cases required factual data in the declaration(s) to show that which was asserted was asserted to overcome a prima facie obviousness issue over the cited references absent the unexpected results. See also *In re Hyson* cited in *Linder*, and *ex parte George* cited in cases related to those cited in the MPEP where the claims in the various cases were deemed prima facie obvious per se without the additional objective evidence. In each of the cited

cases, the evidence of non-obviousness was the urged unexpected results or secondary considerations as evidence of unobviousness, wherein the claims per se were otherwise prima facie obvious over the cited references. This is not the present fact situation as explained below and as admitted in the Action, wherein the declaration is deemed sufficient to overcome the obviousness issue with respect to the references, but is insufficient only with respect to inherency of the on/off ratio.

The instant declaration is also concerned with the unobviousness of the biaxially stretched substrate in view of the cited references to Shi, Carey and Bao. The so called unexpected results recited in applicants' filed declaration are only ancillary and unnecessary to the issue of obviousness with respect to showing the inherency of the on/off ratio. However, this aspect of the prior amended claims is deleted from the prior claims and is only added in a few of the new dependent claims. However, the unexpected results of the declaration do not concern the broader concept of the fact that none of the cited references disclose or suggest an organic functional layer on a biaxially stretched substrate with improved electrical properties as discussed herein below and in applicants' prior responses, and thus there is no issue of prima facie obviousness of the instant claims over the cited references..

Therefore, the so called missing data or factual requirements of the filed declaration are misplaced, since such test data is only required when unexpected results is the basis for an unobvious conclusion over the references, or other issues

involved with overcoming a prima facie obviousness issue. The declaration serves as additional evidence to overcome the allegation that the disclosed subject matter in the application is obvious over the references (which is not a prima facie case of obviousness) and to show inherency of the on/off ratio in the as filed application, neither of which assertions require such test data. Therefore, applicants have shown that the on/off ratio is inherent in their application as filed, is not new matter, and this basis of the rejection should be withdrawn.

The request for an Information disclosure statement

The Action states that the attachment to the declaration should be filed as an information disclosure statement. The Action misunderstands the nature of the cited patents. These are not filed for purposes of a disclosure statement. These are cited as products of the declarant Dr. Fix wherein he was involved with such as an inventor. These patents are cited to show his background as one of ordinary skill in this art with respect to making the declaration. Such an IDS requirement should be withdrawn as not germane to the cited patents. They are not submitted for consideration as a reference by the Office.

The formality rejections of the claims over 35 USC 112, 1st paragraph

Since applicants have shown above that the subject matter of new claims 11-13 directed to the on/off ration is moot in that this subject matter is inherent in the filed

application without the need for additional test data, and thus the amended specification correctly calls for this property. The amendment to the specification and claims is acceptable, and this basis of the rejection should be withdrawn.

The substantive rejections

Claim 1 is rejected as being unpatentable under 35 USC 103 over the article by Bao, Carey '550 and Shi '640. Applicants traverse this rejection.

Amended claim 1 calls for:

In an electronic organic component, the combination comprising:
a substrate of the electronic component; and
an organic functional layer coated on the substrate;

wherein said substrate comprises a biaxially stretched(well-ordered) plastic film such that the orderliness of the plastic film forms the applied functional layer into a well-ordered layer to thereby improve the electrical properties of the component.

The biaxially stretching of a substrate to improve the electrical properties of the component of a coated organic functional layer on the substrate is not suggested by the cited references taken individually or in combination. The claimed device comprises a substrate and an organic semiconductor wherein the substrate is biaxially stretched to improve the electrical properties of the coated organic functional layer. This structure is missing in all of the cited references and not suggested singly or in combination.

Bao is cited for teaching the substrate is commonly used and is polyethylene, but the Office Action admits that this reference does not disclose the substrate is biaxially stretched as claimed.

Carey is cited for teaching that it is known to provide a biaxially stretched well ordered plastic film. This is not accurate as Carey is silent as to any well ordered (aligned molecules) property of any applied layer due to that stretching. The Carey reference does not disclose an organic functional or semiconductor layer adjacent to a layer polyethylene, and thus is irrelevant. The layer that is adjacent to the biaxially stretched substrate is SiO_2 , not an organic functional material exhibit improved electrical properties as claimed. Carey is silent as to this aspect of applicants' claims.

While Carey discloses a substrate that is biaxially stretched, Carey does not disclose that it creates a well ordered condition in the applied layer as asserted or that it may or can improve the electrical properties of an organic layer applied contiguous thereon. Carey is silent and does not discloses or suggest this. This is not inherent in Carey, and as the MPEP states, that inherency property must be recognized by one of ordinary skill and such recognition is not shown by Carey nor by the Action. That is applicants' contribution, not Carey's.

This reference discloses an isolation layer, SiO_2 , not an organic functional layer as claimed, next to this substrate, and thus not relevant to what is claimed. The Action combines Carey with Bao, but this combination still does not suggest what is claimed because what is claimed is missing in both. To combine Bao with Carey merely

suggests that the so called substrate of Bao as having a stretched substrate as suggested by Carey now will have an inorganic SiO_2 isolation layer next to the stretched substrate as suggested by Carey, not an organic functional layer as claimed. Further, no convincing line of reasoning is given as to why one of skill would want to combine Carey with Bao, and even if so combined, there is no inherent teaching of what is claimed in these references as so combined. Mere possibilities is insufficient. The semiconductor layer of Bao may or may not be adjacent to the biaxially stretched substrate of Carey since Carey applies a silicon insulation layer on that substrate. There is no inherency per se of what is claimed is such a combination.

See Carey Figs. 1 and 2 disclosing an insulating layer of SiO_2 layer 11, an inorganic material, not a semiconductor and plainly not an organic functional layer with improved electrical properties as claimed. Carey is silent as to this and it is speculation and not inherent to suggest that Bao suggests applying a functional layer to the Carey substrate in view of the Carey disclosure directed to applying a silicon dielectric layer and not a functional layer to the substrate..

This construction would rearrange Bao in a manner contradicting Bao. It is improper to combine references to suggest a reconstruction of the reference in a manner making the reference unsatisfactory for its intended purpose. MPEP 2143.01V and it is improper to propose a modification of a reference to change its principal of operation MPEP 2143.01VI. In any case such a modification still would not inherently produce claim 1 due to the silence of the references as to what is claimed. There is no

suggestion in these references to make such a substitution apart from applicants' disclosure, and to modify the references in view of an applicants' disclosure is improper.

Shi is cited as disclosing a semiconductor deposited on a substrate and is combined with Bao and Carey. The Action assumes Shi discloses stretching their substrate to obtain the desired molecular alignment. This is not true as shown below. Shi points one of ordinary skill away from applicants' claim 1 and does not suggest the combination as asserted in the Action. Even if the proposed modification were proper as asserted contrary to the silent disclosures of the cited references to Bao and Carey as discussed above, the Action states that Shi teaches it is known to provide an organic semiconductor functional layer coated on the substrate referring to Fig. 6. This is not a sufficient or adequate statement regarding the disclosure of Shi.

What is also overlooked is the fact that Shi does not disclose that stretching an organic functional layer will improve its electrical properties. This is assumed by the Action, but not supported expressly by Shi, which does not disclose any stretching of such an organic functional layer. In the various embodiments, Shi only discloses that the orientation film is used to orient the molecules of the semiconductor in a uniaxial direction, col. 3, line 9, lines 48-50, wherein the alignment is to direct the current to and between the source and drain electrodes uniaxially.

More importantly, see col. 4, lines 33-36 and claim 10, wherein it is disclosed that the orientation film is created by rubbing mechanically (not stretching as claimed, a different process), or the film can be oriented by an electric or magnetic field. It is not

clear what an electric field is referring to as distinguished from a magnetic field, since a current that flows in a conductor creates a magnetic field. In any case, rubbing a surface, or applying electric or magnetic fields to create the oriented molecules in Shi are not a stretching action as claimed.

See also col. 4, lines 58-67 stating:

“if a film of an organic polymeric semiconductor material with a linear [meaning uniaxially] extended π -conjugated backbone is used in the transistor, the orientation direction of the orientation film [uniaxial] is preferentially controlled such that the film of organic polymeric semiconductor material grows or deposits on top of the orientation film with extended π -conjugated backbone aligned in the source to drain direction [a uniaxial direction].” (underlining added)

See also the continuation of Shi’s discussion at col. 5, lines 1-5, further emphasizing Shi’s desired alignment is in the uniaxial linear source-drain direction. More importantly, Shi does not disclose stretching, much less that stretching the substrate will result in a well ordered substrate. Shi is silent as to this and does not go so far. There is no disclosure in Bao, Carey or Shi that stretching an organic functional layer will have any effect on improving the electrical properties of a component. Bao, Shi and Carey are silent as to this aspect of applicants’ claim 1.

What Shi discloses is uniaxially orienting the molecules (aligning them) in a uniaxially direction by a rubbing or applying a magnetic field, but not by stretching as claimed. Carey does not recognize this property of the disclosed biaxially stretching and thus provides no motivation to one of ordinary skill to combine its biaxially stretched substrate in a manner suggested by the Action with Shi. Shi suggests merely that to

provide oriented semiconductor one must rub it or expose it to a magnetic field. This is not what is claimed.

A rubbing action is not a stretching action. To rub means to subject a surface of something to a pressure and friction such as in cleaning, polishing, moving back and forth or rotary motion on a surface of something. *The Random House College Dictionary*, Revised Edition, 1975, page 1151. Acting on the surface of something is not the same as acting on the something in its entirety such as by stretching. These are unrelated processes. Stretching elongates an object, rubbing does not. No convincing line of reasoning is offered that supports the obviousness conclusion of the Action. See also applicants' filed declaration wherein one of high skill in this art, Dr. Fix, indicates that the subject matter similar to that being claimed is not obvious for various reasons. At best, Shi suggests rubbing the substrate of Carey or exposing it to a magnetic field. Neither Shi nor Carey recognize that the Carey stretched substrate exhibits any improved electrical properties in an applied organic functional layer as claimed.

Therefore, if one of ordinary skill were to biaxially stretch the Shi substrate film, it would appear to counter the Shi desired uniaxial linear orientation in the source to drain direction. Such biaxial directions appear to intuitively conflict with the intent of Shi to improve the orientation of the semiconductor film in this direction, as neither Shi nor Carey recognize what would happen to the uniaxially aligned molecules of Shi if it were exposed to biaxially stretching as suggested. There is no teaching in either to enhance the electrical properties of an applied organic functional layer by such stretching. It

would appear such stretching would diminish the effectiveness of the Shi disclosure. Shi's disclosure thus conflicts with and is contrary to applicants' claim and does not suggest this structure. This is a proscribed teaching away. MPEP 2145(X)(D1) (D2) & (D3).

There is no motivation to combine Shi, Bao and Carey as suggested by the Action to do what is claimed by reason of their silence. The claim is directed to orienting the substrate biaxially to improve the electrical properties of an applied organic functional layer. None of these cited references including Shi, which teaches a different method than stretching to obtain a uniaxial molecular orientation, suggest that applicants' biaxially stretched film substrate would be advantageous to enhance the electrical properties of an organic functional layer.

It is known as demonstrated by Shi that uniaxial orienting the molecules in the substrate uniaxially by a non-stretching action accomplishes an enhanced orientation of the semiconductor material in a desired drain source direction. It is unknown in this art that biaxially stretching would offer any advantage at all over that non-stretching uniaxially orientation of a substrate as suggested by Shi. That is applicants' contribution. Recognition of a problem with the prior art and not recognized by the prior art is an element of unobviousness. MPEP 2141.02. The claimed invention as whole must be considered. MPEP2141.02 There must be a reasonable expectation of success. MPEP 2143.02 Shi teaches otherwise. Claim 1 is believed unobvious over these references and thus allowable.

Method claim 5, and device claims 7 and 10 include subject matter similar to claim 1 and are believed allowable for similar reasons.

Claims 2, 4, 6, 9, and 11-13 depend from their respective independent claims and are believed allowable at least for the same reasons given for the independent claims as well as the structures or steps claimed therein not shown or suggested by the cited references. These claims are believed allowable.

Since claims 1-2, 4-7, 9-13 have been shown to be in proper form for allowance, such action is respectfully requested.

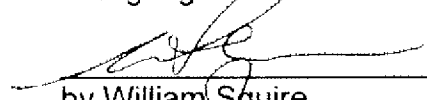
There is one added independent claim. Applicants previously paid for 20 total claims and three independent claims. There are now 18 total claims and 4 independent claims.

Applicants request a one month extension of time to respond to the Office Action so that the time for response expires on July 19, 2009.

The Commissioner is authorized to charge the \$350 fee including the \$130 extension fee and \$220 fee for the added independent claim to deposit account 03 0678 or any other fees that may be due for this paper or credit the deposit account for any overpayments in connection with this paper.

July 9, 2009

Respectfully submitted,
Wolfgang Clemens et al.



by William Squire
Reg. No. 25,378, Attorney for Applicants
Carella, Byrne, Bain, Gilfillan, Cecchi,
Stewart and Olstein
5 Becker Farm Road
Roseland, NJ 07068

Phone: 973-994-1700
Fax: 973-994-1744

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